CARANGIDS OF THE NORTHERN GULF OF MEXICO

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INTRODUCTION

The family Carangidae consists of about 200 species of fishes in tropical and temperate waters throughout the world. Thirty-seven of these occur in waters of the U.S.A., twenty-four in the northern Gulf of Mexico. All are predacious, feeding on fishes, molluscs, or zooplankton. Carangids have narrow caudal peduncles and forked caudal fins. They are strong swimmers. Their body shapes vary from fusiform to high-bodied and laterally compressed. Each has a pair of stout spines that precede the anal fin. Most species occur in schools, while some are solitary. All members of this family are believed to be pelagic spawners, and their eggs are believed to be planktonic. Most of the juveniles are banded; some species may retain the bands in adulthood. Many of the young are found in association with floating and swimming objects, such as jellyfish, *Sargassum*, and flotsam. Several species have been suspected of causing ciguatera (poisoning from eating fish). The family contains species that are notable in various parts of the world as food fishes and as sport fishes.

The purpose of this review is to summarize what is known about the carangid fishes of the northern Gulf of Mexico. For life history information, the availability of the information rather than the information itself was summarized. Much of the data on the scads (species of *Trachurus* and *Decapterus*), the Atlantic bumper (*Chloroscombrus chrysurus*), and the blue runner (*Caranx crysos*) were obtained from a synopsis of coastal herrings and associated species prepared by Reintjes (1979). Most of the available data on the early life history of carangids were obtained from Aprieto (1974), Jackson (1976, 1977a, 1977b, 1979a, 1979b), and Johnson (1978). Bohlke and Chaplin (1968), Hoese and Moore (1977), Randall (1968), and Walls (1975) were very useful references for the species accounts. Other information was obtained from various sources in the literature. References cited in the bibliography were selected as appropriate for, or relating particularly to, the northern Gulf of Mexico.

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Two dozen species of carangids (Table 1) are known to occur in the northern Gulf of Mexico. Some are regarded as prized food fish (e.g., Florida pompano, *Trachinotus carolinus*), some as excellent game fish (e.g., greater amberjack, *Seriola dumerili*), some as curiosities (e.g., lookdown, *Selene vomer*), some as excellent bait for game fishes (e.g.,

round scad, *Decapturus bipinnulatus*), and some as nuisance or trash fish (e.g., Atlantic bumper, *Chloroscombrus chrysurus*). A brief account of each of the twenty-four species follows.

Leatherjacket, *Oligoplites saurus*

The leatherjacket is a laterally compressed fish, dark greenish on its back, silvery on its sides, and with yellow fins (especially the caudal). It is a schooling species. This species has very stout, sharp spines anterior to both the dorsal and anal fins. These spines, according to Hoese and Moore (1977), "contain a small amount of poison, so it should be handled with care." This species occurs in the eastern Pacific and the western Atlantic; in the Atlantic, it ranges from New England to Uruguay. It is common in the northern Gulf of Mexico.

Rainbow Runner, *Elagatis bipinnulata*

This fish has a fusiform body with horizontal bands — a narrow blue, a broad yellow, a narrow blue, and a narrow yellow (from top to bottom) — along its flanks. It is strictly pelagic, occurring sometimes in schools and sometimes solitarily. The rainbow runner is regarded highly as both a sport fish and a food fish. It is circumtropical; in the western Atlantic, it is found from New England to Venezuela. The rainbow runner is not seen often in the northern gulf.

Florida Pompano, *Trachinotus carolinus*

The Florida pompano is a deep bodied, silvery fish with a short, blunt snout. This species is eagerly sought by both sport and commercial fishermen. It is the highest valued of all of the carangids in the market place. The young are frequently found along the shores of the northern gulf. It occurs from New England to Brazil. This species is common in the northern gulf.

Permit, *Trachinotus falcatus*

The permit is shaped similarly to the Florida pompano, but it gets much larger (up to 50 pounds). It too is a popular sport and food fish. The young of this species can be distinguished from the Florida pompano by the color of its fins — reddish in permit, yellowish in Florida pompano. The young of this species is also found frequently along the shores of the northern gulf. The species occurs in both the eastern and western Atlantic, in the latter from New England to Brazil. The permit is not as common as the Florida pompano in the northern gulf.

Palometa, *Trachinotus goodei*

This fish is also shaped similarly to the Florida pompano, except that its dorsal and anal fins are elongated. Four of five dark, thin, vertical bars are present on its sides. The palometa occurs from New England to Brazil. It is not common in the northern gulf.

Almaco Jack, *Seriola rivoliana*

Of the amberjacks (genus *Seriola*), this species has the most elongated dorsal and anal fins. It may attain a size of 50 pounds. The young, which have prominent dark bars on their sides, as do all the juveniles of this genus, are often found near floating *Sargassum*. It is a cosmopolitan species; in the western Atlantic, it ranges from New Jersey to Argentina. The almaco jack is rarely seen in the northern gulf.

Lesser Amberjack, *Seriola fasciata*

As its name implies, this is one of the smaller amberjacks. It is poorly known and is rare in the northern gulf. The young of this species also may be associated with floating *Sargassum*. This species occurs on both sides of the Atlantic. In the western Atlantic, it is known from New England to Cuba.

Greater Amberjack, *Seriola dumerili*

The greater amberjack is a very common species in the northern gulf. It is eagerly

sought by sport fishermen, and although it is a fine food fish, it is often not eaten by them. This is the largest of the amberjacks, attaining weights well over 100 pounds. It, like the other species of *Seriola*, has a prominent dark stripe extending from the tip of the snout, passing through the eye, and extending to the origin of the dorsal fin. These stripes are evanescent features of the genus *Seriola*, as they become very prominent when the fish is excited and then fade away when the fish become quiescent. The greater amberjack is one of the major suspects of ciguatera in the Caribbean. Small juveniles are often associated with floating *Sargassum*. The greater amberjack is a circumtropical species. In the western Atlantic, it occurs from New England to Brazil.

Banded Rudderfish, *Seriola zonata*

The juveniles of this species are often found around pilings and piers in inshore waters. In offshore waters, the small juveniles are associated with jellyfishes and other floating objects. Larger juveniles are often seen in association with sharks, along with the pilot fish (*Naucrates ductor*). This species ranges from Nova Scotia to Brazil in the western Atlantic. The banded rudderfish is the second most common species of *Seriola* in the northern gulf.

African Pompano, *Alectis crinitus*

Juveniles of the African pompano are characterized by long fin rays on both the dorsal and anal fins. These fin rays may get as long as four times the body length. As the fish attains adulthood, these rays become shorter, probably through abrasion. This species is circumtropical. In the western Atlantic, it occurs from New England to Brazil. The African pompano is seen frequently in the northern gulf.

Atlantic Moonfish, *Voemer setapinnis*

The atlantic moonfish is characterized by a steep and slanting forehead, laterally compressed body, and silvery appearance. The juveniles have a prominent black spot on each side. This species is common in the northern gulf and is found frequently in the stomachs of billfishes. It is found in the eastern Pacific and in both the eastern and western Atlantic. In the latter, it occurs from Nova Scotia to Uruguay.

Lookdown, *Selene vomer*

The lookdown is shaped similarly to the Atlantic moonfish, except that the slant of the forehead is much steeper, and the dorsal and anal fins are elongated. The length of the extended dorsal fin rays in juveniles is very pronounced and may be greater than twice the length of the body. The juveniles do not have black spots on their sides. This species is not abundant in the northern gulf. Its distribution in the Atlantic and Pacific is similar to that of the Atlantic moonfish.

Rough Scad, *Trachurus lathami*

This species is characterized by having scutes along its entire lateral line. It is a pelagic schooling species. The rough scad appears to be abundant along the Texas coast, more so than in the northeastern gulf. It occurs in the western Atlantic from new England to Argentina.

Round Scad, *Decapturus punctatus*

The round scad has a fusiform body, and because of this, it is called cigar fish or cigar minnow, especially in the northeastern gulf where it is more abundant than in other areas of the northern gulf. It is a pelagic schooling species, occurring sometimes in schools mixed with other species, such as the rough scad, Spanish sardine (*Sardinella anchovia*), and chub mackerel (*Scomber japonicus*). It is quite abundant in inshore waters of northwest Florida during the warm months and is used as bait by sport fishermen. This species is known from both sides of the Atlantic. It ranges from New England to Brazil in the western Atlantic.

Bigeye Scad, *Selar crumenophthalmus*

The shape of the body of the bigeye scad is similar to that of the rough scad, but the

lateral-line scales are not all developed into prominent scutes as they are in the rough scad. This species is circumtropical, and although it may occur in large schools elsewhere, it is relatively uncommon in the northern gulf. In the western Atlantic, it ranges from Nova Scotia to Brazil.

Atlantic Bumper, *Chloroscombrus chrysurus*

This laterally compressed fish has a very slim caudal peduncle with a black spot at the upper base of the caudal fin, which is yellow. It, like the Atlantic moonfish, is frequently found in the stomachs of billfishes in the northern gulf. Small juveniles are frequently found under jellyfish. This species occasionally occurs in large schools in the northern gulf, where it is common. In the western Atlantic, it occurs from New England to Uruguay.

Bluntnose Jack, *Hemicaranx amblyrhynchus*

The young of this species is usually found under jellyfishes. This is one of the smaller species of jacks. Information on this species is sparse. It is not common in the northern gulf. In the western Atlantic, it ranges from North Carolina to Brazil.

Cottonmouth Jack, *Uraspis secunda*

This jack obtained its name from its milky-white tongue. It is a circumtropical species. In the western Atlantic, it occurs from New England to Brazil. It is uncommon in the northern gulf.

Bar Jack, *Caranx ruber*

The name of this jack is derived from a dark band, or bar, that extends along the base of the dorsal fin and down to the tip of the lower lobe of the caudal fin. This species, like the greater amberjack, has been implicated in ciguatera in the West Indies. It ranges from New Jersey to Brazil in the western Atlantic. It is very uncommon in the northern gulf.

Yellow Jack, *Caranx bartholomaei*

The shape of this species is similar to that of the bar jack. The yellow jack lacks the dark bar, has yellow fins and is tinged with yellow on its flanks. It too has been implicated in ciguatera in the West Indies. This fish is very uncommon in the northern gulf. It occurs in the western Atlantic from New England to Brazil.

Blue Runner, *Caranx crysos*

The blue runner is also known as the hardtail or hardtail jack. It is abundant in the northern gulf, frequently occurring in schools. It is shaped similarly to the bar jack and yellow jack. It can be distinguished by the black tips of its caudal fin. This species also has been found in stomachs of billfishes in the northern gulf. It occurs in both the eastern and western Atlantic; in the western, its range extends from Nova Scotia to Brazil.

Black Jack, *Caranx lugubris*

The black jack, as its name implies, is very darkly pigmented. Its forehead is much more steeply inclined than the other species of *Caranx*. Although it is circumtropical, it is rarely seen in the northern gulf. In the western Atlantic, this species ranges from Bermuda to Brazil.

Crevalle, *Caranx hippos*

This fish is also called jack crevalle and crevalle jack. It also has been implicated in ciguatera. The crevalle has a prominent black spot on the upper posterior margin of its opercles and also on the lower rays of its pectoral fins. It is a highly favored fish for both sport and food. The species is circumtropical. In the western Atlantic it ranges from Nova Scotia to Uruguay. It is very common in the northern gulf, sometimes occurring in large schools.

Horse-Eye Jack, *Caranx latus*

This fish is similar to the crevalle, but it lacks the black spot on the opercles and pectoral

fins. It may be misidentified as a crevalle by most fishermen, and therefore it may be more common in the northern gulf than is supposed. It also has been implicated in ciguatera. In the western Atlantic, this species ranges from New Jersey to Brazil.

LARVAL AND JUVENILE BIOLOGY

The availability of information on various aspects of the early life history of those species occurring in the northern Gulf of Mexico was summarized (Table 2). Larval descriptions of 11 or 12 species and juvenile descriptions of 18 species have been published. Because ichthyoplankton surveys and faunal surveys have been conducted in both inshore and offshore waters, much data on the distribution and occurrence of larvae and juveniles are available. The availability of data on growth and maturation size, however, is limited. The behavior data pertains to the association of juveniles with jellyfishes, *Sargassum*, and flotsam.

ADULT BIOLOGY

The availability of information on aspects of the adult life history was also summarized (Table 3). Although information for the indicated species may be available from other parts of the world, data from the northern gulf are very sparse. The spawning information is derived from inferences made from the occurrences of larvae and early juveniles. The distribution data were derived from faunal surveys conducted by state conservation departments and the U.S. Bureau of Commercial Fisheries. Note that data on food and on age and growth of these species are non-existent for the northern gulf. The predators of the five species have been identified in food studies of billfishes in the northern gulf. Comparison of the availability of information on pre-adults and adults (Tables 2 and 3) clearly shows the greater paucity of data on adults.

COMMERCIAL LANDINGS

Commercial landings statistics are available for six species (Table 4). The statistics are for the entire Gulf of Mexico. Amberjack landings since 1970 have shown a slow but steady increase. The blue runner landings have fluctuated through the years; it declined the last two years. Landings of cigarfish, permit, and pompano have fluctuated, but all showed a decline in 1978 from the previous year. Crevalle landings appear to indicate a leveling off at about 1,600,000 pounds in the last three years.

The values of the landings (Table 4) clearly show that the pompano is the most valuable species of the six. The five other species show values of less than a dollar a pound, and the pompano show a value exceeding a dollar a pound. In 1978, its value rose to over two dollars a pound.

Mexican landings of crevalle and blue runner (data for other species not available) in the Mexican sectors of the Gulf of Mexico (Table 5) show similarities in trend to the U.S. landings. From 1976 to 1978, the landings of crevalle seemed to stabilize at approximately 2,000,000 pounds, whereas the blue runner landings during the same period show a continuing decline. No explanation for the similar trends in the two countries for these two species is available.

METHODS OF CAPTURE AND MARKETS

Capture methods and the uses to which the catches are put were summarized for seven species of carangids in the Gulf of Mexico (Table 6). Haul seines (also called beach seines), purse seines, gill nets, trammel nets, and various techniques using hooks and lines are used to catch carangids. Pompano and Atlantic bumper are caught in trawls as incidental catches. Shrimp trawlers catch both pompano and Atlantic bumpers. The pompano are valued sufficiently to be kept, whereas the Atlantic bumper is discarded. Atlantic bumpers are also caught by industrial fish trawlers, which keep their entire catches for the

pet-food producers. Blue runners, cigarfish, and Atlantic bumpers are used for bait by trollers and by crabbers. Blue runners are also sold to zoos for animal food. Blue runner, crevalle, and amberjack are sold for human consumption in both domestic and foreign markets. The pompano and permit are sold for human consumption only in domestic markets.

SUMMARY

Knowledge of the twenty-four species of carangids that have been reported from the northern Gulf of Mexico is inadequate to determine the feasibility of exploitation or of greater exploitation. More information on the early life history of these species is available than on their late juvenile and adult life history. Information on the distribution and abundance of economically harvestable quantities, yield estimates, and biomass estimates are non-existent. Until such data become available, fishermen will have to depend upon their own exploratory efforts, or on luck, to increase catches of carangids in the northern Gulf of Mexico.

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Table 1. Carangids of the northern Gulf of Mexico (from Hoese and Moore, 1977).

Name	Maximum size (inches)
Leatherjacket (*Oligoplites saurus*)	10
Rainbow runner (*Elagatis bipinnulata*)	12
Florida pompano (*Trachinotus carolinus*)	17
Permit, (*Trachinotus falcatus*)	31
Palometa, longfinned pompano (*Trachinotus goodei*)	12
Almaco jack (*Seriola rivoliana*)	36
Lesser amberjack (*Seriola fasciata*)	12
Greater amberjack (*Seriola dumerili*)	36
Banded rudderfish (*Seriola zonata*)	24
African pompano (*Alectis crinitus*)	24
Atlantic moonfish (*Vomer setapinnis*)	15
Lookdown (*Selene vomer*)	12
Rough scad (*Trachurus lathami*)	8
Round scad, cigarfish (*Decapturus punctatus*)	7
Bigeye scad (*Selar crumenophthlamus*)	12
Atlantic bumper (*Chloroscombrus chrysurus*)	12
Bluntnose jack (*Hemicaranx amblyrhyncus*)	11
Cottonmouth jack (*Uraspis secunda*)	8
Bar jack (*Caranx ruber*)	22
Yellow jack (*Caranx bartholomaei*)	36
Blue runner, hardtail (*Caranx crysos*)	26
Black jack (*Caranx lugubris*)	36
Crevalle, common jack (*Caranx hippos*)	40
Horse-eye jack (*Caranx latus*)	22

Table 2. Availability of information on early life history of carangids of the northern Gulf of Mexico (X = information is available).

	Description of			Growth	Distribution [1]	Behavior	Maturation Size
	Eggs	Larvae	Juveniles				
Leatherjacket	X	X	X	X	X		
Rainbow runner		X	X			X	
Florida pompano	X		X	X	X		X
Permit		X	X	X	X		
Palometa			X				
Almaco jack			X			X	
Lesser amberjack			X			X	X
Greater amberjack	X [2]	X [2]	X [2]		X	X	X
Banded rudderfish		X	X			X	
African pompano			X		X		
Atlantic moonfish			X		X		X
Lookdown		X	X		X		
Rough scad						X	
Round scad		X	X	X	X		
Bigeye scad	X	X			X		
Atlantic bumper					X	X	X
Bluntnose jack						X	
Cottonmouth jack			X				
Bar jack							
Yellow jack		X	X			X	
Blue runner		X	X		X	X	X
Black jack							
Crevalle jack		? [3]	X		X	X	
Horse-eye jack		? [3]				X	

[1] Distribution in northern gulf
[2] Need confirmation
[3] Description of one may actually be that of the other

Table 3. Availability of information on adult carangids of the northern Gulf of Mexico (X = information is available).

Predators [1]	Food, Age, & Growth [1]	Length-Weight [1]	Sex Ratio Relat. [1]	Fecundity	Spawning [1]	Distrib. & Abund. [1]	Migration
Leatherjacket					X	X	
Rainbow runner					X	X	
Florida pompano				X	X	X	
Permit					X	X	
Palometa					X		
Almaco jack					X		
Lesser amberjack							
Greater amberjack					X		X [2]
Banded rudderfish					X		
African pompano							
Atlantic moonfish	X				X	X	
Lookdown					X		
Rough scad					X	X	
Round scad		X	X		X	X	
Bigeye scad	X				X	X	
Atlantic bumper	X	X			X	X	
Bluntnose jack							
Cottonmouth jack							
Bar jack							
Yellow jack					X		
Blue runner	X				X		
Black jack							
Crevalle jack					X		
Horse-eye jack					X		

[1] In northern Gulf of Mexico

[2] Longest migration: 1,560 miles from Jacksonville, FL to Columbia, South America; longest time at large: 7.3 years.

Table 4. Landings and values of carangids in the U.S. Gulf of Mexico.

	1970	1971	1972	1973	1974	1975	1976	1977	1978
					Thousand Pounds				
Amberjack	20	45	44	39	58	91	96	131	156
Blue runner	1,378	2,227	2,063	1,374	658	1,680	1,921	1,348	661
Cigarfish	259	527	509	519	725	696	771	903	687
Crevalle	576	676	903	2,428	2,089	2,847	1,630	1,407	1,755
Permit	12	21	82	66	58	207	161	62	6
Pompano	906	859	1,126	948	1,245	1,193	948	915	639
					Thousand Dollars				
Amberjack	2	4	2	3	4	11	10	15	24
Blue runner	62	90	103	87	59	170	126	164	91
Cigarfish	39	70	68	79	110	104	115	129	111
Crevalle	22	21	33	137	137	202	133	115	166
Permit	1	3	14	13	11	41	43	22	2
Pompano	1,009	1,075	1,435	1,129	1,565	1,327	1,267	1,375	1,289

Table 5. Landings of crevalle and blue runner in the Mexican Gulf of Mexico.

Year	Crevalle [1] (*Caranx hippos*)		Blue runner [2] (*Caranx crysos*)	
	Kilograms	**Pounds**	**Kilograms**	**Pounds**
1968	381,758	841,624	906,072	1,997,526
1969	444,355	979,625	818,390	1,804,222
1970	504,910	1,113,124	678,697	1,496,255
1971	407,600	898,595	679,645	1,498,345
1972	618,100	1,362,663	685,360	1,510,945
1973	767,101	1,691,151	858,999	1,893,749
1974	923,928	2,036,892	752,758	1,659,530
1975	1,146,809	2,528,255	536,847	1,183,533
1976	873,739	1,926,245	238,931	526,747
1977	899,456	1,982,941	249,982	551,110
1978	965,722	2,129,031	204,706	451,295
Total	7,933,478	17,490,146	6,610,387	14,573,256

[1] Mexican common name: Jurel
[2] Mexican common mame: Cojinuda

Table 6. Methods of capture and uses of caringids in the Gulf of Mexico.

	Capture Method						Uses			
	Trawl	Haul Seine	Purse Seine	Gill Net	Tram-mel Net	Hook & Line	Zoos	Bait	Pet Food	Hu-man Food
Blue runner		X	X	X	X	X	X	X		X [1]
Cigarfish		X	X					X		
Crevalle		X	X	X	X	X				X [1]
Permit		X		X	X	X				X
Pompano	X	X		X	X	X				X
Amberjack				X		X				X [1]
Atlantic bumper	X							X	X	

[1] Both domestic and foreign

QUESTIONS AND ANSWERS SESSION

Eugene Nakamura

Q. Are there reports of ciguatera in fish from the northern Gulf at all?

A. I am unaware of any ciguatera in the northern Gulf of Mexico.

Q. One thing you didn't mention is the growth of pressure on some stocks. Some of the information that is available through the Management Plan indicates that some of these stocks are partially harvested because of lack of a market or whatever and yet in some of your information you show a decline. What ones would you say receive the most pressure and which ones do you think could stand additional harvesting pressure?

A. A species that has been receiving increasing fishing pressure in the last few years is the amberjack. The reason is that, at least in the northeastern Gulf of Mexico, we've had for the five year period, relatively poor king mackerel years, so that the interest of the recreational fishermen has switched from that species to others and they have been catching a lot of amberjack. I suspect that it can still withstand some more pressure. I can't give you figures, I'm just giving you my impression. I suspect that the scads can also stand increasing pressure. There is some concern or there certainly will be I am sure if a heavy commercial fishery developes for these cigar minnows that the recreational interests will let their feelings be known about harvesting of these species. They believe that without these cigar minnows in our area in the Northeast Gulf of Mexico that the predators will disappear and their sportfishing activities will decline.

Q. One last question, the majority of this information is based on results caught in unusual fishing?

A. Correct.

Q. Am I safe in assuming that in this point in time there really hasn't been that much work on the distribution of species in offshore waters?

A. That is correct. The Oregon II has gone out. They trawled and they recorded what they caught. That is where much of that distribution information on the adult life history comes from. Much of that is from Oregon II. That information is known, they know exactly where they were, the depth of the water, the temperature of the water, the salinity of the water, the characteristics of the bottom, etc.

Q. Are our fishing techniques similar to what is being used in other parts of the world to catch carangid?

A. I don't know too much about fishing for carangides in other parts of the world. Because some of these small scads occur in sizeable schools, I am sure that they are caught with nets, I am sure that they are not caught individually. And the larger fish I am sure are caught with various nets — gill netting, trammel netting, seines — there aren't too many methods of fishing, so I am sure that there are certain similarities in the methods of capture. The Mexicans though, do use traps, which we don't use.

CARANGIDS OF THE NORTHERN GULF OF MEXICO

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